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10/715,069	11/17/2003	Bernhard Stellwag	MOH-P010057	3307
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LERNER GREENBERG STEMER LLP			MONDT, JOHANNES P	
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HOLLYWOOD, FL 33022-2480			3663	

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/715,069

Applicant(s)

STELLWAG ET AL.

Examiner

Johannes P. Mondt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,4 and 6-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/17/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Response to Amendment***

Amendment filed 5/1/06 forms the basis for this office action. In said Amendment applicants substantially amended claims 1 and claims 3-4 and 6-7 depending thereon, and added new claims 8-9.

Comments on Remarks submitted with said Amendment are included below under "Response to Arguments".

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed "condensate or feed water system", the claimed "primary system" and the claimed "components" and "surfaces of the components" must be shown or the features canceled from the claims (see claim 4 for "condensate or feed water system" and for "primary system", claims 1, 3, 8 and 9 for "the components", and claims 1, 6-9 for the "surfaces of the components"). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

1. **Claim 7** is objected to because of the following informalities: "component surfaces" (line 2) should be replaced by "surfaces of the components".

Appropriate correction is required.

### ***Specification***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. The specification is objected to because the term "bright" in the limitation "wherein the surfaces of the components are bright" (claim 8) is a relative term that is not quantified. The degree of oxidation has to be small for any surface to be bright, but how small is never specified.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. The term "bright" in **claim 8** is a relative term which renders the claim indefinite.

The term "bright" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 3-4 and 6-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hettiarachchi (5,818,893) (made of record and cited previously).

*On claim 1: Hettiarachchi teaches* (title, abstract, cols. 1-4 and 8-11) a method for protecting components of a primary system (col. 8, l. 24-29) of a boiling water reactor (col. 1, l. 10-32) having a pressure vessel 10 and feed water line 12 (col. 8, l. 24-29) opening out into the pressure vessel (Figure 1), the method comprising:

providing an alcohol selected from the group consisting of methanol, ethanol and propanol (namely: ethanol: see col. 9, l. 55-67);

continuously (in the test over a period of about 30 minutes, and necessarily "continuously" because the ethanol is added as a component in a liquid: see col. 9, l.

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55-67 and col. 10, l. 1-16; in operational use the concentration of the solution is clearly maintained (see ) feeding the alcohol into a primary coolant ("high-temperature water"; col. 9, l. 9-23). Furthermore, noting that the addition of Pd during only 30 minutes is only a test showing the feasibility of depositing palladium on Type304, in applications of the invention to actual use in BWRs the solution is evidently taught to be maintained at a level to ensure the Pd concentration to be between 1 ppb and 1,000 ppb (=parts per billion) (col. 11, l. 23-25), while the ratio of Pd atoms to ethanol molecules follows from the cited content in milligrams of Pd-acetylacetonate ( $\text{Pd}(\text{C}_5\text{H}_7\text{O}_2)_2$ ) (molecular weight:= 304.4 amu; see [www.knovel.com](http://www.knovel.com) for physical constants) and the volume content of ethanol ( $+\text{C}_2\text{H}_5\text{OH}$ ) (molecular weight = 46) that are mixed together in the liquid (col. 9, l. 55-67), namely 50 ml. Given the specific weight of ethanol (0.79 times that of water) said ratio is thus seen to be =  $(52.6 \times 10^{-3}/304.4): (39.5 \times 10^{-3}/46) = 0.02$  (within one percent accuracy), and hence the aforementioned concentration of Pd implies a concentration in terms of parts per billion of ethanol equal to between 5 ppb and 5,000 ppb of ethanol. In light of the molar weight of ethanol (=46) and the molar weight of the solvent (water: 18) (col. 9, l. 60) i.e, between  $5 \times 10^{-9}$  and  $5 \times 10^{-6}$ ) times the number of moles of water in 1 kg, the latter is  $1,000/18 = 55.6$  moles, hence between  $5 \times 10^{-9} \times 55.6$  and  $5 \times 10^{-6} \times 55.6$  moles / kg, or between 0.278  $\mu\text{moles/kg}$  and 278  $\mu\text{moles/kg}$  (within a relative error of one percent). The range in the prior art is thus seen to significantly overlap the range in the invention as claimed, having in common the intersection 0.278 – 10  $\mu\text{moles/kg}$ . The aforementioned substantial overlap of the ranges as claimed in the prior art and in the invention as claimed at least establishes prima

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facie obviousness: A *prima facie* case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art or when the ranges of a claimed composition do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties. In re Peterson, 65 USPQ2d 1379 (CA FC 2003).

Furthermore, the feeding indeed occurs in a down comer 16 (col. 8, l. 55-67), the down comer extending downward at an opening of the feed water line (see Figure 1), with surfaces of the components covered only by a native oxide layer (core shroud 18 is of stainless steel (col. 7, l. 55-67) while the conditions for native oxide layer only as provided by definition of native oxide layer given by applicants (specification, pages 6-7) are met, i.e., the corrosion potential is less than the critical potential of -230 mV (col. 3, l. 10-21 and col. 4, l. 55-67).

*On claim 3:* the method by Hettiarachchi comprises protecting the components (such as 18 as identified overleaf) against stress corrosion cracking (see abstract and col. 1, l. 44-56, and col. 9, l. 25-40).

*On claim 4:* the method comprises feeding the alcohol into a condensate or feed water system and carrying the alcohol into the primary system with the feed water (col. 9, l. 55-67 and col. 10, l. 1-16).

*On claim 6:* the method comprises doping the component surfaces with a precious metal, namely: Pd (palladium) (col. 7, l. 10-35, col. 10, l. 20-col. 11, l. 25).

*On claim 7:* platinum (Pt) is one of the metals recommended in the method by Hettiarachchi (col. 5, l. 26-38 and col. 12, claim 7) while the surfaces of the components

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are doped with any of said one of the metals (col. 7, l. 55-67). Furthermore, considering that the actual purpose of metal additions pertains to achieving concentrations in terms of particle number for lowering the (electrochemical corrosion potential ("ECP") (col. 3, l. 10-50) it would have been obvious to adapt the 52.6 mg used for palladium acetylacetonate to reflect the different molecular weight of 393.29 so as to keep the parts per billion unaltered; which leads to the same range for ethanol concentration as before. Hence the method with substitution of Pt for Pd still meets all claim limitations with the proviso of overlapping concentration ranges.

*On claim 8:* This rejection is offered subject to the indefiniteness noted above under 35 USC 112, second paragraph, assuming that "bright" means "substantially non-oxidized". The surfaces of the components are substantially non-oxidized ("bright") because the conditions are met for an oxidation level at or below that of native oxide, as witnessed by the value of the electrochemical corrosion potential below the critical value (col. 3, l. 10-21 and col. 4, l. 55-67).

*On claim 9:* the surfaces of the components are covered by a native oxide layer, as witnessed by the value of the electrochemical corrosion potential below the critical value of -230 mV for stainless steel (col. 3, l. 10-21 and col. 4, l. 55-67).

### ***Response to Arguments***

Applicant's arguments filed 5/1/06 have been fully considered but they are not persuasive. In particular:

(a) With regard to the traverse of the rejection under 35 USC 112, second paragraph, of claims 1, 3-4 and 6-7: while applicants argue successfully that "bright" is a



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term in the steel and metallurgical fields, applicants evidently admit that "bright" is a term of relative degree in said fields and, accordingly, the traverse of the rejection under 35 USC 112, second paragraph stating that the term "bright" is a term of relative degree is still deemed appropriate for the original claim 1 and claims dependent thereon (see final paragraph of Remarks, page 5, especially the bracketed portion, in which applicants admit that no quantification of what constitutes "bright" is provided), and is appropriate for the newly added claim 8 reciting "bright" but without any quantitative measure. As made of record in the previous office action, examination has been conducted under the assumption that within the context of the claim language "bright" means "substantially non-oxidized", which is broad but not indefinite.

(b) With regard to the traverse of the rejections under 35 USC 103(a) of claims 1, 3-4 and 6-7 over Hettiarachchi (5,818,893), applicants' traverse appears based only on a distinction between alcohol as solvent and as anti-oxidation compound (page 8, first paragraph), from which applicants conclude that some suggestion by Hettiarachchi '893 is at the basis of the rejection under 103(a) (page 8 of Remarks, second paragraph). However, the rejection does not rely on any suggestion by Hettiarachchi et al: Hettiarachchi et al explicitly teach all limitations recited in claim 1 except for non-congruent ranges for the alcohol concentration. As mentioned in the rejection, said ranges do substantially overlap, which, as confirmed by the cited case law (in re Peterson, 65 USPQ2d 1379 (CA FC 2003)), constitutes a *prima facie* case of obviousness. Therefore, said traverse of the rejections as provided in the previous office action under 35 USC 103(a) does not persuade.

(c) The current amendment to claim 1 is substantial because said surfaces of the components are currently claimed to be "covered by no more than a native oxide layer", instead of "being bright or covered only by a native oxide layer" (italics added for highlighting an essential difference with the currently amended language). What is meant by "native oxide" is explained in the specification as follows (see pages 6-7 of the specification):

"In this context, a native oxide layer is to be understood as meaning an oxide layer which forms as a result of corrosion to the component material, if appropriate with the intercalation of foreign metals or foreign metal oxides, during reactor operation or during an oxidizing pretreatment. It has been found that the metering-in of an alcohol of the above type as the only measure is sufficient to reduce the corrosion potential of the component surfaces to values of lower than -230 mV, and it is possible to dispense with complex coatings in particular comprising substances with a photo-catalytic action".

In other words: "native oxide layer" does not exclude intercalation with foreign metals, such as those introduced by Hettiarachchi et al (Pd or Pt Group metal) but does occur due to the reduction of the corrosion potential to values  $< -230$  mV, which is exactly what Hettiarachchi also teach to be accomplished by their method (see col. 3, l. 11-21). That their method also involves the introduction of Pd or any other Pt Group metal is irrelevant for the current claim language that is silent about any other ingredients that may also be provided in addition to the recited alcohol. Given the overlap in alcohol concentration ranges as claimed and as found in the prior art the alcohol concentration evidently is sufficient by itself to lower the corrosion potential to values  $< -230$  mV at least over the overlapping portion of the concentration ranges.

In view of the above, the currently amended claims 1, 3, 4, 6 and 7 are again rejected over Hettariachchi et al. Newly added claims 8 and 9 have been examined at the earliest possible time.

**Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P. Mondt whose telephone number is 571-272-1919. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JPM

July 10, 2006

Patent Examiner:

A handwritten signature in black ink, appearing to read 'J. Mondt', is written over a horizontal line.

Johannes Mondt (Art Unit: 3663).